

# EFFECTS OF SOCIAL ELABORATION ON INTENTIONAL MEMORY OF WORDS

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EFFECTS OF SOCIAL ELABORATION ON INTENTIONAL MEMORY OF WORDS

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*Summary* The present study investigated the effects of social elaboration on intentional free recall. In the learning phase, participants were asked to remember target words to associate each target word with a particular person in a social elaboration condition. In addition, they were asked to remember target words and associate each target word with a particular word that was related to the target in a semantic elaboration condition. The learning phase was followed by a free recall test and a checking phase. In the checking phase, participants were asked to indicate whether each target reminded them of a particular person or word. Targets associated with a particular person were recalled more often than those associated with a particular word. The result showed the superiority of social elaboration over semantic elaboration and were interpreted as showing that information about a particular person made the target more distinctive than did information about a particular word.

Recall of target words is determined by the encoding contexts. When additional information is added to the contexts, this additional information can become a cue for retrieving each target. According to previous studies (Jacoby & Craik, 1979; Toyota, 1987), the addition of information to the target is defined as elaboration. The quality of information added to the targets determines the effectiveness of elaboration. Effective elaboration (precise elaboration) leads to better performance than non-effective elaboration (imprecise elaboration). Stein, Morris, and Bransford (1978) compared the effects of three types of sentence frames as contexts for the target word (e.g., “fat”) on incidental memory: a base sentence (e.g., “The fat man read the sign.”); a precise elaboration sentence (e.g., “The fat man read the sign warning about thin ice.”); and an imprecise elaboration sentence (e.g., “The fat man read the sign that was two feet high.”). Participants were asked to rate the degree of comprehension of each sentence in an orienting phase, which was followed by incidental recall test. The precise elaboration sentence frame led to better recall of the targets than the base sentence frame, which in turn led to better recall than the imprecise sentence frame. The superiority of precise elaboration sentences over other sentences may be the result of the precise elaboration sentence making the meaning of each target clearer. In other words, the meaning of each target was constrained by the context of the precise elaboration. Toyota (1984) and Toyota (2000) have also investigated the effects of types of sentence frame. In those studies, two types of sentences were provided: interchangeable and non-interchangeable. In an interchangeable sentence (e.g., “His hair is long.”), a target word (e.g., “long”) can be interchanged with an associated word (e.g., “short”), whereas in a non-interchangeable sentence (e.g., “The graffe’s neck is long.”), a target cannot be interchanged with an associated word. If a target was substituted with an associate word in a non-interchangeable sentence, the sentence would not make sense. Thus, in this

situation, the meaning of each target was constrained by the context provided by the non-interchangeable sentence. The studies described above illustrate the semantic constraints of context on recall. The more the meaning of target was constrained, the more distinctive the target became and the more frequently it was recalled. A number of studies (Merry, 1980; Cox & Wollen, 1981; Cornoldi, McDaniel & Einstein, 1986; Imai & Richman, 1991; Toyota, 1987, 2002; Robinson-Rieger, & McDaniel, 1994) have described the effects of “bizarreness” on memory. For example, a bizarre sentence (e.g., “My sister have a beard.”) can lead to better recall than “normal” sentence (e.g., “My sister puts on a skirt.”). One explanation of the “bizarreness effect” is that bizarre sentences make the targets more distinctive.

In addition, Furthermore, the superiority of autobiographical elaboration (Warren, Chattin, Thompson, & Tomsy, 1983) over the semantic elaboration on memory is caused by a difference in distinctiveness between the two types of elaboration. Autobiographical elaboration refers to the addition of past episodes to the target (Warren *et al.*, 1983, Toyota, 1989). Such episodes are retrieved from episodic memory (Tulving, 1972), and are idiosyncratic. Thus, these episodes are more distinctive than the semantic elaboration that occurs when semantic information is added to the context (Toyota, 1997). As mentioned above, distinctiveness is critical to accurate recall performance. In particular, Hunt (2006) has stressed the role of distinctiveness on memory. The more distinctive a target, the more it would be recalled. Specifically, contexts that make a target more distinctive will be more effective in influencing retrieval of the target.

Toyota and Kita (2010) proposed a type of elaboration, named social elaboration, in which the target is made distinctive by adding celebrities’ names. Each target word and the name of a celebrity who was congruous or incongruous to the target, were presented in a social elaboration condition. By contrast, in a semantic elaboration condition, each target and a word (either a semantic associate or non-associate), were presented. Participants were asked to rate the degree of congruity between each target and its paired word (i.e., the celebrity’s name or the semantic word), and were then given an incidental free recall test. The results showed that social elaboration led to better recall than semantic elaboration. This result was interpreted as showing that a particular person’s information was rich, distinctive, and effective for aiding recall of the target it elaborated. However, because Toyota and Kita (2010) presented celebrities’ names as the social information in a social elaboration condition, it is not clear whether the social information plus the celebrity’s name or only the celebrity’s name was responsible for the improved target retrieval. According to Keenan and Baillet (1980), the information about the person that is familiar to each participants is rich, well-constructed, and easy to access. Thus, the familiar person’s information as well as celebrity’s name would be effective in retrieving the target. In Toyota and Kita (2010), the celebrity’s name was presented by the experimenter, and the target was elaborated by the experimenter. Previous studies (Pressley, McDaniel, Turnure, Wood, & Ahmad, 1987; Toyota, 1998) showed the self-generated elaboration effect on memory, targets elaborated by information generated by participants were recalled more often than targets provided by experimenter. In other words, self-generated elaboration was more effective than experimenter-provided elaboration. Considering this self-generated effects, the present study used a procedure that asked the participants to generate the social information (i.e., a familiar person, celebrity name, or anyone else) in a social elaboration condition, and the semantic information (associate word) in a semantic elaboration condition.

Although Toyota and Kita (2010) used the incidental memory procedure, person information may also be an effective cue for retrieving a target in an intentional memory procedure. Participants in an intentional procedure have stronger intentions to recall targets and to use the connection between a target and its associated person’s information, compared to those in an incidental procedure.

Thus the present study compared the effect of social elaboration by generating person information with that of semantic elaboration by generating an associate word on intentional free recall. It was assumed that person information would be a distinctive cue for retrieving each target. Given this assumption, it was predicted that targets associated with a particular person would be recalled more often than those associated with a word. The purpose of the present study was to test this prediction.

## Method

## Design

A  $2 \times 2$  design was used in which the first factor was the type of elaboration (social and semantic), and the second factor was whether participants elaborated a target or not (elaborated vs. not elaborated). Both were within-subjects factors.

## Participants

The participants were 52 female students from two nursing schools located in Nara prefecture in Japan. The mean age of these participants was 19.56 years (range: 18.40- 22.50). Two groups of 26 participants attended the experiments separately. All participated in the experiments voluntarily, and were informed of both the purpose of the experiment and the results of their own personal performance.

## Materials

The twenty-eight targets used in the present study were the same as those in Toyota and Kita (2010) and were selected from a normative set (Kitao, Hatta, Ishida, Babazono, & Kondo, 1977). Table 1 lists all of the target words. Each target was written in a Japanese Kanji character that was familiar to the participants. Targets were listed on PowerPoint slides. Each target was placed on upper part of a slide; beneath the target, a word (person or word) indicating the type of information each participant was asked to generate was presented. Two types of lists were provided. Each list comprised fourteen slides of targets for both the social elaboration and semantic elaboration conditions. For the first list, the targets on the left side of Table 1 were assigned to the social elaboration condition and those on the right side were assigned to the semantic elaboration condition. For the second list, the assignment of target words to each condition was reversed. In each list, all target words were presented once and one buffer slide was presented in the first and last serial positions during list learning.

Table 1

Targets (kanji words) used in the present study

1	2	3	4	5	6	7	8	9	10	11	12	13	14	(station)	旗(flag)	(painting)	店(shop)	港(harbar)	柱(pillar)	星(star)	茶(tea)	虫(insect)	花
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## Procedure

The experiment was performed with all participants under the intentional memory instruction. The participants were given standard instruction about the intentional free recall test.

*Learning phase.* — The task was explained with an illustration using PowerPoint slides displayed on a board at the front of a classroom. First, the participants were given the following instructions: “A Kanji word is shown in the upper part of each slide. The first task is to remember it. There is second task on each page [pointing to the example on the white board]. In this slide [assigned to the social elaboration condition], the word “person” is presented below a Kanji word. On this type of slide, your second task is to think about any person that you are reminded of by the word. In the other type of slide [assigned to the semantic elaboration condition], the word “word” is presented below a Kanji word. On this type of slide, your task is to think about any word (associated word) that you are reminded of by the word. ” Participants were given 5 seconds per slide to complete the first and second tasks.

*Free recall test phase.* Following the learning phase, the participants were required to recall as many of the targets (Kanji words) as possible and to write them down. Three min. were allowed for this test.

*Checking phase.* Following the free recall test, the participants were given a sheet with all the target words printed on it. Each participant was asked to indicate whether each target word reminded him or her of a person in the social elaboration condition or a word in the semantic elaboration condition. If a particular target word reminded the participant of a person or a word, he or she was asked to circle “generated” on

the sheet; if it did not, the participant was asked to circle “not generated” on the sheet. The checking phase lasted 3 min.

## Results

For the 14 targets in the social elaboration condition, the mean numbers of targets were 8.81 and 5.19 when the target reminded the participants of a person (“generated”) or not (“not generated”), respectively. For the 14 targets in the semantic elaboration condition, the mean number of targets were 8.08 and 5.92 when the participants were reminded of a particular word (“generated”) or not (“not generated”), respectively. On the basis of these numbers, the percentages that the targets were correctly recalled were calculated. These percentages are shown in Table 2 as a function of the type of elaboration (social vs. semantic) and whether the corresponding information was generated (generated vs. not-generated). A 2 (social vs. semantic)  $\times$  2 (generated vs. not-generated) analysis of variance showed that main effects of type of elaboration ( $F_{1,51} = 17.01, p < .001, \eta^2 = .03$ ) and whether the corresponding information was generated ( $F_{1,51} = 121.15, p < .01, \eta^2 = .39$ ) were significant and that the interaction between elaboration type and whether the corresponding information was generated ( $F_{1,51} = 3.12, p < .08, \eta^2 = .01$ ) was marginally significant. Planned comparisons were performed for this interaction; although the simple effect of the elaboration type was not significant in the non-generated condition ( $F_{1,102} = 1.61$ ), it was significant in the generated condition ( $F_{1,102} = 15.93, p < .001$ ).

Table 2

Mean percentages of correct recall as a function of the type of elaboration (social vs. semantic) and whether the corresponding information was generated or not.

Generated Elaboration	Generated	Generated	Not-generated	Not-generated
	Social	Semantic	Social	Semantic
<i>M SD</i>	.68 .18	.53 .25	.25 .26	.20 .23

## Discussion

The purpose of the present study was to compare the effects of social elaboration and semantic elaboration on intentional free recall. The prediction was that social elaboration would lead to better recall than the semantic elaboration. The results were consistent with this prediction. The superiority of social elaboration over semantic elaboration previously found in the incidental free recall (Toyota & Kita, 2010) was also found in intentional free recall in the present study. Toyota and Kita (2010) used the celebrities’ names as the information added to a target in the social elaboration condition, whereas in the present study, generated person information was used as the added information. These results indicate that both generated person information and celebrities’ names can effectively make each target more distinctive, and that effect was observed in both incidental and intentional memory. Hunt (2006) stressed the importance of distinctiveness on memory. Several factors that increase the level of distinctiveness have been studied: the semantic constraints of contexts (Stein *et al.*, 1978; Toyota, 1984, 2001), autobiographical episodes (Warren *et al.*, 1983; Toyota, 1989), and bizarre sentence (Merry, 1980; Toyota, 2002). The present results indicate that the generated person information was another determinant of level of distinctiveness. Notably, the present study used the intentional recall procedure. In this situation, the participants were motivated to recall as many of the targets as possible. Thus, they were more aware of the cue for retrieving the targets. Person information is a critical retrieval cue for each target, because it has a unique connection to the corresponding target. In other words, the strong connection between a target and the person information (i.e., mother, friends, name of film actor, etc.) passes retrieval to the target.

Although it was not the purpose of the present study, a large difference of recall performance was found between targets that had added generated information and those that did not. Pressley *et al.* (1987) used the incidental memory procedure, presented each participant with a sentence including a target word (e.g.,

“The hungry man got into the car.”) and asked them to answer an elaborative interrogation (e.g., “Why did the particular man do that?”) prior to the incidental recall test. Recall performance of target word (e.g., “hungry”) was lower when the participants could not answer the elaborative interrogation. The reason is that the absence of an answer meant there was no cue present to integrate the target into the cognitive structure (Hashtroudi, Parker, DeLisi, & Wyatt, 1983). With respect to the intentional memory procedure used in the present study, if there was an absence of generated information (i.e., person or word), then there was no retrieval cue for the target. Thus, the lower performance was caused by the absence of a target retrieval cue.

Finally, one methodological problem should be mentioned. The procedure resulted in a variety of generated information. For example, in the social elaboration condition, the generated person information included a variety of people, such as a celebrity’s name or the participant’s mother, father, sister, friend, teacher, etc. Unfortunately, the present study did not clarify the details of the generated person information. If this information were to be clarified, we would be able to determine which aspects of person information increase the level of distinctiveness. Thus, further research in which participants are asked to report the details of the person information generated during the learning phase is necessary.

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